AMENDMENTS TO THE CLAIMS

Replace the claims with the following rewritten version:

1. (Original) A physiological sensing device comprising:

an electrical sensor dimensioned for insertion into the tissue of a live animal with minimal disruption to the tissue and configured to measure electrically at least one physiological parameter of the tissue, such as the partial pressure of carbon dioxide, the partial pressure of oxygen, temperature, pH or glucose concentration;

an electrical cable for communicating signals from the sensor and connected electrically at its distal end to the sensor; and

a sheath mechanically connected to the sensor and extending with and surrounding at least a portion of the length of the cable,

wherein the sheath comprises a plurality of substantially longitudinally extending flexible portions separated by a plurality of longitudinal slits, such that movement of the proximal end of the sheath towards the distal end of the sheath shortens the distance between the ends of the flexible portions and causes the flexible portions to project outwardly and thereby increase the effective diameter of the sheath in the region of the flexible portions, such that the sensor can be retained in animal tissue by the projecting flexible portions.

2. (Original) A device as claimed in claim 1 further comprising a line mechanically connected to the distal end of the sheath and extending longitudinally with the cable for assisting in pulling the distal end of the sheath towards the proximal end thereof.

3. (Currently Amended) A device as claimed in claim 1 ~~or 2~~, wherein the cable is surrounded only by the sheath.

4. (Currently Amended) A device as claimed in ~~any preceding~~ claim 1 having a maximum diameter, with the flexible portions flush with the sheath, of 2 mm, preferably 1 mm.

5. (Currently Amended) A device as claimed in ~~any preceding~~ claim 1, wherein the sensor is a sensor for the partial pressure of carbon dioxide (pCO_2) and comprises two spaced electrodes in a chamber containing water, the chamber being bounded at least partially by a carbon dioxide permeable membrane.

6. (Original) A device as claimed in claim 5, wherein the sheath forms the carbon dioxide permeable membrane.

7. (Original) A physiological sensing device comprising:

a sensor for the partial pressure of carbon dioxide (pCO_2) having two spaced electrodes in a chamber containing water, the chamber being bounded at least partially by a carbon dioxide permeable membrane;

an electrical cable connected electrically at its distal end to the electrodes; and

a sheath extending with and surrounding at least a portion of the length of the cable,

wherein the sheath forms the carbon dioxide permeable membrane.

8. (Currently Amended) A device as claimed in ~~any preceding~~ claim 7 comprising a plurality of sensors for respective physiological parameters.

9. (Currently Amended) A device as claimed in ~~any preceding~~ claim 7 comprising a temperature sensor.

10. (Original) A physiological sensing device comprising:

an electrical sensor dimensioned for insertion into the tissue of a live animal with minimal disruption to the tissue and configured to measure electrically at least one physiological parameter of the tissue, such as the partial pressure of carbon dioxide, the partial pressure of oxygen, temperature, pH or glucose concentration;

a signal processing device connected to the electrical sensor and arranged to process signals from the electrical sensor to generate a measurement of the physiological parameter; and

a reference electrode for electrical connection to a patient,

wherein the reference electrode is connected to the signal processing device and the signal processing device is configured to compensate the electrical signals from the electrical sensor for electromagnetic noise from the patient by reference to signals from the reference electrode.

11. (Original) A physiological sensor comprising:

a sensor body having a longitudinal axis;

at least two electrodes spaced in a direction transverse to the longitudinal axis of the sensor body;

a plurality of support members extending outwardly from the axis of the sensor body and defining between adjacent support members at least one liquid channel that provides a fluid pathway between the electrodes; and

a gas-permeable, liquid-impermeable membrane supported by the support members and providing an outer wall of the liquid channel(s).

12.(Original) A sensor as claimed in claim 11, wherein the electrodes extend longitudinally.

13. (Currently Amended) A sensor as claimed in claim 11 ~~or 12~~, wherein the liquid channel(s) are transverse to the longitudinal axis of the sensor body.

14. (Currently Amended) A sensor as claimed in ~~any of~~ claims 11 ~~to 13~~, wherein the support members are transverse to the longitudinal axis of the sensor body.

15. (Currently Amended) A sensor as claimed in ~~any of~~ claims 11 ~~to 14~~, wherein the support members are formed integrally with the sensor body.

16. (Currently Amended) A sensor as claimed in ~~any of~~ claims 11 ~~to 15~~, wherein the electrodes are located in a recess in the sensor body that has a greater cross-sectional area than the liquid channels.

17. (Original) A method of manufacturing a physiological sensor comprising a sensor body having defined therein a water-filled chamber closed by a semi-permeable membrane, the method comprising:

immersing the sensor body in water; and

attaching the membrane to the sensor body to close the chamber while the sensor body is in the water.